

# MPSA75, MPSA77

## Darlington Transistors

### PNP Silicon

#### Features

- Pb-Free Packages are Available\*

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit	
Collector–Emitter Voltage	MPSA75 MPSA77	V <sub>CES</sub>	-40 -60	Vdc
Emitter–Base Voltage		V <sub>EBO</sub>	-10	Vdc
Collector Current – Continuous		I <sub>C</sub>	-500	mAdc
Total Device Dissipation @ T <sub>A</sub> = 25°C Derate above 25°C		P <sub>D</sub>	625 5.0	mW mW/°C
Operating and Storage Junction Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	-55 to +150	°C

#### THERMAL CHARACTERISTICS

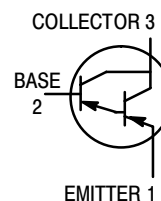
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	R <sub>θJA</sub>	200	°C/W

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

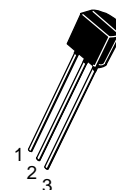


ON Semiconductor®

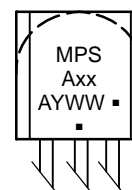
<http://onsemi.com>



#### MARKING DIAGRAM



TO-92  
CASE 29-11  
STYLE 1



MPSAxx = Device Code  
xx = 75 or 77  
A = Assembly Location  
Y = Year  
WW = Work Week

▪ = Pb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

Device	Package	Shipping†
MPSA75RLRA	TO-92	2,000/Tape & Reel
MPSA75RLRAG	TO-92 (Pb-Free)	2,000/Tape & Reel
MPSA75RLRP	TO-92	2,000/Ammo Pack
MPSA75RLRPG	TO-92 (Pb-Free)	2,000/Ammo Pack
MPSA77	TO-92	5,000 Units/Box
MPSA77G	TO-92 (Pb-Free)	5,000 Units/Box
MPSA77RLRA	TO-92	2,000/Ammo Pack
MPSA77RLRAG	TO-92 (Pb-Free)	2,000/Ammo Pack

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# MPSA75, MPSA77

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector–Emitter Breakdown Voltage (I <sub>C</sub> = –100 μAdc, V <sub>BE</sub> = 0)	MPSA75 MPSA77	V <sub>(BR)CES</sub>	–40 –60	– –	Vdc
Collector–Base Breakdown Voltage (I <sub>C</sub> = 100 μAdc, I <sub>E</sub> = 0)	MPSA75 MPSA77	V <sub>(BR)CBO</sub>	–40 –60	– –	Vdc
Collector Cutoff Current (V <sub>CB</sub> = –30 V, I <sub>E</sub> = 0) (V <sub>CB</sub> = –50 V, I <sub>E</sub> = 0)	MPSA75 MPSA77	I <sub>CBO</sub>	– –	– –	nAdc
Collector Cutoff Current (V <sub>CE</sub> = –30 V, V <sub>BE</sub> = 0) (V <sub>CE</sub> = –50 V, V <sub>BE</sub> = 0)	MPSA75 MPSA77	I <sub>CES</sub>	– –	– –	nAdc
Emitter Cutoff Current (V <sub>EB</sub> = –10 Vdc)		I <sub>EBO</sub>	–	–	nAdc
<b>ON CHARACTERISTICS</b>					
DC Current Gain (I <sub>C</sub> = –10 mA, V <sub>CE</sub> = –5.0 V) (I <sub>C</sub> = –100 mA, V <sub>CE</sub> = –5.0 V)		h <sub>FE</sub>	10,000 10,000	– –	–
Collector–Emitter Saturation Voltage (I <sub>C</sub> = –100 mA, I <sub>B</sub> = –0.1 mAdc)		V <sub>CE(sat)</sub>	–	–	–1.5 Vdc
Base–Emitter On Voltage (I <sub>C</sub> = –100 mA, V <sub>CE</sub> = –5.0 Vdc)		V <sub>BE</sub>	–	–	–2.0 Vdc
<b>SMALL–SIGNAL CHARACTERISTICS</b>					
Current–Gain – High Frequency (I <sub>C</sub> = –10 mA, V <sub>CE</sub> = –5.0 V, f = 100 MHz)		h <sub>fe</sub>	1.25	2.4	–

# MPSA75, MPSA77

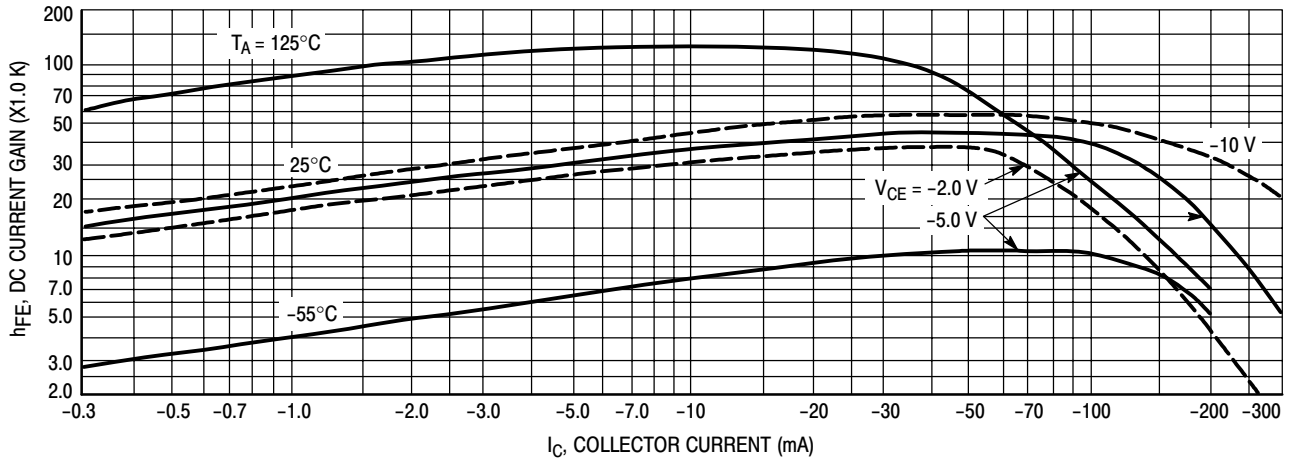


Figure 1. DC Current Gain

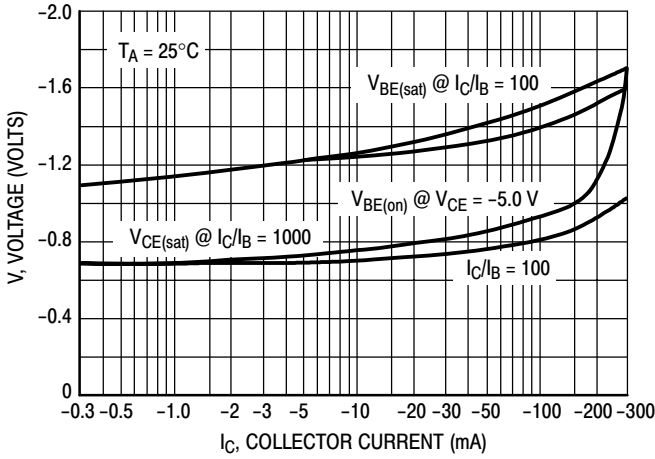


Figure 2. "On" Voltage

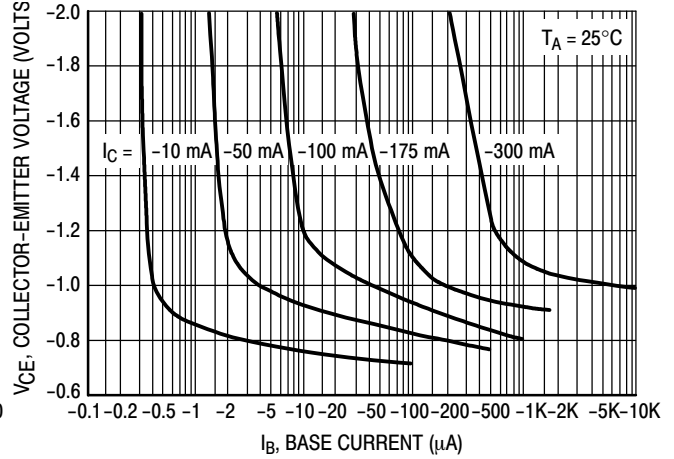


Figure 3. Collector Saturation Region

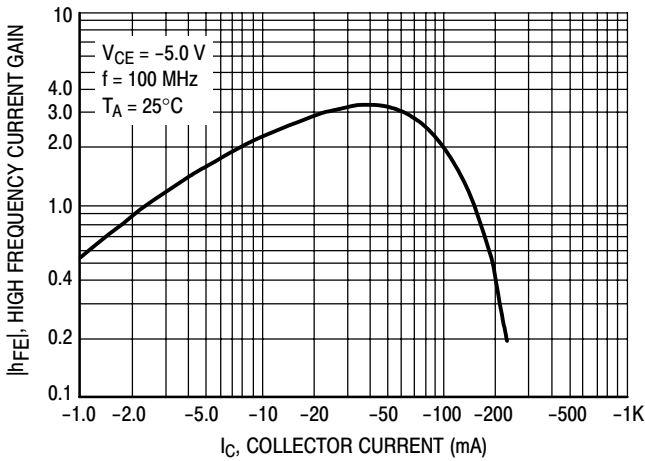


Figure 4. High Frequency Current Gain

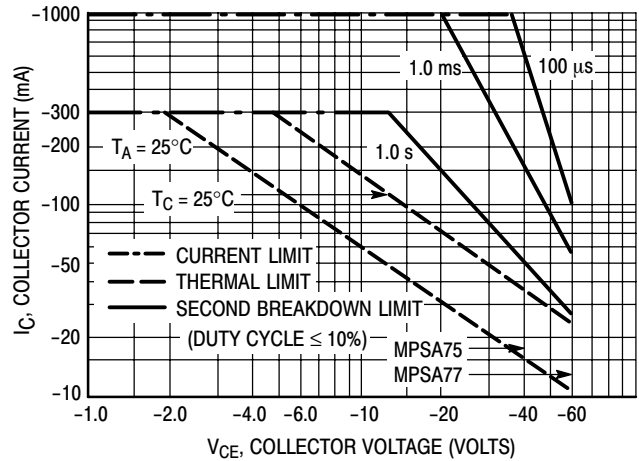
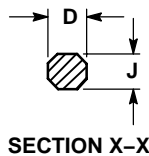
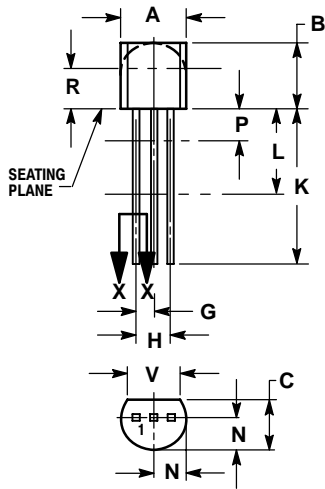


Figure 5. Active Region, Safe Operating Area

# MPSA75, MPSA77

## PACKAGE DIMENSIONS

TO-92 (TO-226)  
CASE 29-11  
ISSUE AL



### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---

### STYLE 1:

1. PIN 1. EMITTER
2. BASE
3. COLLECTOR

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

### PUBLICATION ORDERING INFORMATION

#### LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor  
P.O. Box 61312, Phoenix, Arizona 85082-1312 USA  
Phone: 480-829-7710 or 800-344-3860 Toll Free USA/Canada  
Fax: 480-829-7709 or 800-344-3867 Toll Free USA/Canada  
Email: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

N. American Technical Support: 800-282-9855 Toll Free  
USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center  
2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051  
Phone: 81-3-5773-3850

ON Semiconductor Website: <http://onsemi.com>

Order Literature: <http://www.onsemi.com/litorder>

For additional information, please contact your local Sales Representative.